

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A method of treating a fluorocompound-containing gas stream, the method comprising:
 - generating a plasma stream from a plasma source gas;
 - injecting the generated plasma stream through an aperture into a chamber;
 - conveying to the plasma stream a source of OH^- and/or H^+ ions for impinging upon ~~contacting~~ the plasma stream to form heated OH^- and/or H^+ ions; comprising ions selected from the group consisting of OH^- and H^+ ; and
 - conveying the gas stream to the heated ions.
2. (currently amended) TheA method according to Cclaim 1, wherein the plasma source gas comprises an inert ~~ionisable~~ ionizable gas, ~~for example, one of nitrogen and argon.~~
3. (currently amended) TheA method according to Cclaim 1 ~~or Claim 2~~, wherein the step of generating the plasma stream from a plasma source gas further comprises the plasma stream is formed by generating an electric field between two electrodes, and conveying the plasma source gas between the electrodes to form the plasma stream.
4. (currently amended) TheA method according to Cclaim 3, wherein one of the electrodes ~~provides~~ forms at least a part of a wall of ~~said the~~ the chamber.
5. (currently amended) TheA method according to Cclaim 3 ~~or Claim 4~~, wherein the step of injecting the plasma stream into the chamber further comprises

injecting the plasma stream is injected into the chamber through an aperture formed in one of the electrodes.

6. (currently amended) TheA method according to ~~any preceding claim 1~~, wherein the step of conveying to the plasma stream a source of ions ~~the ion source is conveyed to the plasma stream occurs prior to the injection step of injecting of the plasma stream through an aperture into the chamber.~~
7. (currently amended) TheA method according to ~~C~~claim 6, wherein the step of conveying ion source is conveyed to the plasma stream ~~the source of ions further comprises conveying the source of ions in a stream comprising the plasma source gas.~~
8. (currently amended) TheA method according to ~~C~~claim 6, wherein the source of ions ~~source is conveyed to the plasma stream separately from the plasma source gas.~~
9. (currently amended) TheA method according to ~~any of C~~claims 1 ~~to 5~~, wherein the source of ions ~~source is conveyed to the chamber.~~
10. (currently amended) TheA method according to ~~C~~claim 9, wherein the source of ions ~~source is conveyed into the chamber separately from the gas stream.~~
11. (currently amended) TheA method according to ~~any preceding claim 1~~, wherein the gas stream is conveyed directly to the chamber for reacting with the heated ions therein.
12. (currently amended) TheA method according to ~~any preceding claim 1~~, wherein the gas stream is conveyed to the chamber separately from the plasma stream.

13. (currently amended) ~~The~~A method according to ~~any of~~ Claim 1 to 6, wherein the gas stream is conveyed to the heated ions through the plasma stream.
14. (currently amended) ~~The~~A method according to Claim 13, wherein the gas stream is conveyed to the plasma stream for injection into the chamber therewith.
15. (currently amended) A method of treating a fluorocompound-containing gas stream, the method comprising:
 - generating a plasma stream from a plasma source gas;_i
 - adding the gas stream to the plasma stream;_i
 - injecting the plasma stream and gas stream through an aperture into a ~~reaction chamber;_i~~ and
 - conveying to the plasma stream a source of ~~OH⁻ and/or H⁺~~ ions comprising ions selected from the group consisting of OH⁻ and H⁺.
16. (currently amended) ~~The~~A method according to Claim 15, wherein the plasma source gas comprises an inert ~~ionisable~~ ionizable gas, ~~for example, one of nitrogen and argon.~~
17. (currently amended) ~~The~~A method according to ~~Claim 15 or Claim 16~~, wherein the step of generating the plasma stream from the plasma source gas further comprises the plasma stream is formed by generating an electric field between two electrodes, and conveying the plasma source gas between the electrodes to form the plasma stream.
18. (currently amended) ~~The~~A method according to Claim 17, wherein one of the electrodes ~~provides~~ forms at least a part of a wall of said ~~the~~ chamber.
19. (currently amended) ~~The~~A method according to ~~Claim 17 or Claim 18~~, wherein the step of injecting the plasma stream and gas stream into the

chamber further comprises injecting the plasma stream is injected into the chamber through an aperture formed in one of the electrodes.

20. (currently amended) TheA method according to ~~any of C~~claims 15 to 19, wherein the step of conveying ion source is conveyed to the plasma stream the source of ions occurs prior to the step of injection injecting of the plasma stream and gas stream into the chamber.
21. (currently amended) TheA method according to Cclaim 20, wherein the step of conveying ion source is conveyed to the plasma stream the source of ions further comprises conveying the source of ions in a gas stream comprising the plasma source gas.
22. (currently amended) TheA method according to Cclaim 20, wherein the ion source of ions is conveyed to the plasma stream separately from the plasma source gas.
23. (currently amended) TheA method according to ~~any of C~~claims 15 to 20, wherein the ion source of ions is conveyed to the plasma stream injected into the chamber.
24. (currently amended) TheA method according to ~~any of C~~claims 15 to 20, wherein the ion source of ions is conveyed to the plasma stream within the gas stream.
25. (currently amended) TheA method according to ~~any preceding claim 15,~~ wherein the plasma stream is generated ~~around or below~~at atmospheric pressure.
26. (currently amended) TheA method according to ~~any preceding claim 15,~~ wherein the plasma stream is generated using a dc plasma torch.

27. (currently amended) TheA method according to ~~any preceding claim 15~~, wherein the ~~ion source~~ of ions comprises ~~one of water and water vapour~~.
28. (currently amended) TheA method according to ~~any of Cclaims 151 to 26~~, wherein the ~~ion source~~ of ions comprises an alcohol, ~~for example one selected from the group consisting of~~ methanol, ethanol, propanol, propan-2-ol and butanol.
29. (currently amended) TheA method according to ~~any of Cclaims 151 to 26~~, wherein the ~~ion source~~ of ions comprises a hydrogen-containing compound selected from the group consisting ~~one of~~ hydrogen gas, a hydrocarbon, ammonia, and a paraffin.
30. (currently amended) TheA method according to ~~any preceding claim 15~~, wherein the chamber is at a temperature in the range from ambient to 1200°C.
31. (currently amended) TheA method according to ~~any preceding claim 15~~, wherein the chamber is at ambient temperature.
32. (currently amended) TheA method according to ~~any of Cclaims 15 to 30~~, wherein the chamber is at a temperature in the range from 400°C to 1000°C.
33. (currently amended) TheA method according to ~~any preceding claim 15~~, wherein the chamber is at a pressure in the range from 10^{-3} mbar to 2000 mbar.
34. (currently amended) TheA method according to ~~any preceding claim 15~~, wherein the step of conveying ion source ~~is conveyed into the chamber~~ the source of ions further comprises conveying the source of ions over a catalyst.

35. (currently amended) TheA method according to Cclaim 34, wherein the catalyst comprises a metal selected from the group consisting one of tungsten, silicon, iron, rhodium and platinum.
36. (currently amended) TheA method according to ~~any preceding claim 15,~~ wherein the gas stream is subsequently conveyed further comprising the step of conveying the gas stream from the chamber to a wet scrubber.
37. (currently amended) TheA method according to ~~any preceding claim 15,~~ wherein further comprising the step of conveying the gas stream is subsequently conveyed from the chamber to a reactive media.
38. (currently amended) TheA method according to ~~any preceding claim 15,~~ wherein the perfluorocompound containing gas stream comprises a perfluorocompound selected from the group consisting comprises one of CF₄, C₂F₆, CHF₃, C₃F₈, C₄F₈, NF₃ and SF₆.
39. (currently amended) An Apparatus for treating a fluorocompound-containing gas stream, the apparatus comprising:
a reaction chamber,_i
means for generating a plasma stream from a plasma source gas and injecting the ~~generated~~ plasma stream through an aperture into the chamber,_i
means for conveying to the plasma stream a source of OH⁻ ~~and/or H⁺~~ ions for ~~impinging upon~~ contacting the plasma stream to form heated OH⁻ ~~and/or H⁺~~ ions, comprising ions selected from the group consisting of OH⁻ and H⁺; and
means for conveying the gas stream to the heated ions.
40. (currently amended) The Apparatus according to Cclaim 39, wherein the means for generating a plasma stream comprises means for generating an electric field between two electrodes, and means for conveying the plasma source gas between the electrodes to form the plasma stream.

41. (currently amended) The Apparatus according to Claim 40, wherein one of the electrodes ~~provides forms~~ at least a part of a wall of said ~~the~~ chamber.
42. (currently amended) The Apparatus according to Claim 40 ~~or Claim 41~~, wherein the aperture is ~~located~~ formed in one of the electrodes.
43. (currently amended) The Apparatus according to ~~any of Claim 39 to 42~~, wherein the means for conveying the source of OH^- and/or H^+ ions is arranged to convey the source of OH^- and/or H^+ ions to the plasma stream prior to the injection of the plasma stream into the chamber.
44. (currently amended) The Apparatus according to ~~any of Claims 39 to 42~~, wherein the means for conveying the source of OH^- and/or H^+ ions is arranged to convey the source of OH^- and/or H^+ ions to the chamber.
45. (currently amended) The Apparatus according to ~~any of Claims 39 to 44~~, wherein the means for conveying the source of OH^- and/or H^+ ions to the plasma stream is separate from the means for conveying the gas stream to the heated OH^- and/or H^+ ions.
46. (currently amended) The Apparatus according to ~~any of Claims 39 to 45~~, wherein the means for conveying the gas stream to the heated OH^- and/or H^+ ions is arranged to convey the gas stream directly to the chamber.
47. (currently amended) The Apparatus according to ~~any of Claims 39 to 46~~, wherein the means for conveying the gas stream to the heated OH^- and/or H^+ ions is arranged to convey the gas stream to the chamber through the aperture with the plasma stream.
48. (currently amended) An Apparatus for treating a fluorocompound-containing gas stream, the apparatus comprising:
a reaction chamber;
means for generating a plasma stream from a plasma source gas;

means for conveying the gas stream to the plasma stream;_i

means for injecting the plasma stream and gas stream through an aperture into the reaction chamber;_i and

means for conveying to the plasma stream a source of OH^- and/or H^+ ions comprising ions selected from the group consisting of OH^- and H^+ .

49. (new) The method according to claim 2 wherein the inert ionizable gas is selected from the group consisting of nitrogen and argon.
50. (new) The method according to claim 15 wherein the plasma stream is generated at a pressure below atmospheric pressure.
51. (new) The method according to claim 1 wherein the plasma stream is generated at atmospheric pressure.
52. (new) The method according to claim 1 wherein the plasma stream is generated at a pressure below atmospheric pressure.
53. (new) The method according to claim 1 wherein the plasma stream is generated using a dc plasma torch.
54. (new) The method according to claim 1 wherein the source of ions comprises water.
55. (new) The method according to claim 1 wherein the source of ions comprises an alcohol selected from the group consisting of methanol, ethanol, propanol, propan-2-ol and butanol.
56. (new) The method according to claim 1 wherein the source of ions comprises a hydrogen-containing compound selected from the group consisting of hydrogen gas, a hydrocarbon, ammonia, and a paraffin.

57. (new) The method according to claim 1 wherein the chamber is at a temperature in the range from ambient to 1200°C.
58. (new) The method according to claim 1 wherein the chamber is at ambient temperature.
59. (new) The method according to claim 1 wherein the chamber is at a temperature in the range from 400°C to 1000°C.
60. (new) The method according to claim 1 wherein the chamber is at a pressure in the range from 10^{-3} mbar to 2000 mbar.
61. (new) The method according to claim 1 wherein the step of conveying into the chamber the source of ions further comprises conveying the source of ions over a catalyst.
62. (new) The method according to claim 61 wherein the catalyst comprises a metal selected from the group consisting of tungsten, silicon, iron, rhodium and platinum.
63. (new) The method according to claim 1 further comprising the step of conveying the gas stream from the chamber to a wet scrubber.
64. (new) The method according to claim 1 further comprising the step of conveying the gas stream from the chamber to a reactive media.
65. (new) The method according to claim 1 wherein the fluorocompound containing gas stream comprises a perfluorocompound selected from the group consisting of CF₄, C₂F₆, CHF₃, C₃F₈, C₄F₈, NF₃ and SF₆.